



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW1524G BYPASS RATIO (-): 11.1
 UNIQUE ID NUMBER: 04F20PW196 PRESSURE RATIO π_{co} (-): 38.7
 COMBUSTOR: TALON X, Block-C
 ENGINE TYPE: TF RATED OUTPUT F_{oo} (kN): 108.5

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{oo} (mg/kN)	LTO_{num}/F_{oo} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{oo} AND MAX nvPM _{mass}	15.3	4.06E+14	424
AS % OF CAEP/10 LIMIT	-	-	6.7
AS % OF CAEP/11 LIMIT (InP)	0.7	2.8	
AS % OF CAEP/11 LIMIT (NT)	3.0	6.6	

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	0.788	12.9	1.88E+14	
CLIMB OUT	85	2.2	0.649	8.1	1.90E+14	
APPROACH	30	4.0	0.229	0.2	1.37E+13	
IDLE	7	26.0	0.076	0.5	7.10E+13	
LTO TOTAL (kg, mg, number of particles)			292	1190	3.17E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{oo} VALUES (mg/kN, particles/kN)				11.0	2.92E+14	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				12.9	2.02E+14	330

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (% F_{oo})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	16.2	6.99E+14
CLIMB OUT	85	10.9	9.00E+14
APPROACH	30	0.3	5.92E+13
IDLE	7	0.9	6.07E+14

AMBIENT CONDITIONS

AMBIENT CONDITIONS		FUEL		
	From	To		
BAROMETER (kPa)	102.0	103.3	HEAT OF COMBUSTION (MJ/kg)	43.21
TEMPERATURE (K)	272.0	278.1	HYDROGEN CONTENT (%mass)	13.98
HUMIDITY (kg water/kg dry air)	0.0012	0.0022	AROMATICS CONTENT (%vol)	18.1
			NAPHTHALENE CONTENT (%vol)	0.78
			SULPHUR CONTENT (ppm by mass)	553

MANUFACTURER: Pratt & Whitney
 TEST ORGANIZATION: Pratt & Whitney
 TEST LOCATION: Mirabel Aerospace Centre - Quebec
 TEST DATES: 25/03/2018-26/03/2018

REMARKS

1. Data from certification report PWA-12245-02
2. Block C combustor
3. nvPM levels in accordance with Annex 16 Vol. II, Chapter 4, Appendix 7 and Appendix 8.
4. PW1524G-3 has equivalent rated thrust levels and pressure ratios as PW1524G
5. PW1524G-3 has equivalent ICAO nvPM emissions data as the PW1524G
6. Data revised: nvPM EI_{mass_SL} corrected